

**PROJECT SPECIFIC PLAN FOR
EXCAVATION CONTROL AND PRECERTIFICATION
OF THE AREA 6 WASTE PITS AND GENERAL AREA
(SUPPLEMENT TO 20300-PSP-0011)**

DEMOLITION, SOIL AND DISPOSAL PROJECT

**FERNALD CLOSURE PROJECT
FERNALD, OHIO**



APRIL 2005

**U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE**

**20600-PSP-0016
REVISION A
DRAFT**

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(SUPPLEMENT TO 20300-PSP-0011)**

**Document Number 20600-PSP-0016
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FERNALD CLOSURE PROJECT

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LIST OF ACRONYMS AND ABBREVIATIONS

ASCOC	area-specific constituent of concern
BSL	Biodenitrification Surge Lagoon
COC	constituent of concern
DOE	U.S. Department of Energy
DSDP	Demolition, Soil, and Disposal Project
EMS	Environmental Monitoring System
FACTS	Fernald Analytical Computerized Tracking System
FCP	Fernald Closure Project
FRL	final remediation level
GC	gas chromatograph
HPGe	high-purity germanium (detector)
µg/kg	micrograms per kilogram
MDC	minimum detection concentration
mg/kg	milligrams per kilogram
NaI	sodium iodide
OU	Operable Unit
pCi/g	picoCuries per gram
PID	photo ionization detector
ppm	parts per million
PSP	Project Specific Plan
PWID	Project Waste Identification and Disposition
RSS	Radiation Scanning System
RTIMP	Real Time Instrumentation Measurement Program
RTRAK	Real-Time Radiation Tracking System
RWP	Radiological Work Permit
SED	Sitewide Environmental Database
SP	Soil Pile
SWL	Solid Waste Landfill
SWM	Storm Water Management (Pond)
V/FCN	Variance/Field Change Notice
WAC	waste acceptance criteria
WAO	Waste Acceptance Organization
WPRAP	Waste Pits Remedial Action Project

1.0 INTRODUCTION

This Project Specific Plan (PSP) describes the data collection activities necessary to support excavation control and precertification activities within the Area 6 Waste Pits and General Area. This PSP only represents the specific information regarding soils within this area. The general information that is routinely addressed in a PSP can be found in 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation*. While this PSP has section headings similar to a full-length PSP, where the information in the section is identical to the information in the General PSP (20300-PSP-0011), a reference to the General PSP is made and the information is not repeated.

1.1 PURPOSE

The purpose of this PSP is to provide specific direction regarding the excavation control and precertification of soils within the Area 6 Waste Pits and General Area (see Figure 1-1). The Area 6 Waste Pits are a grouping of the six former waste pits (Waste Pits 1 through 6), the former Burn Pit, and the former Clearwell. The General Area represents the Waste Pits Remedial Action Project (WPRAP) Support Area, the WPRAP Process Area, the Bionitrification Surge Lagoon (BSL), Storm Water Management (SWM) Pond, Soil Stockpile (SP) 7 Footprint, Locomotive Maintenance Building and Railyard, the former Solid Waste Landfill (SWL) Area, and the area west of the Waste Pits (not including Paddys Run). Specific information on reasons to sample, sample location, number of borings, depth intervals, and constituents of concern will be documented according to Section 1.3.

1.2 SCOPE

The area included within the scope of this PSP is the Area 6 Waste Pits and General Area (see Figure 1-1). The area is approximately 86 acres and generally includes the Waste Pit and Operable Unit (OU) 1 process areas, BSL, OU1 railyard, SP-7 above-waste acceptance criteria (WAC) Stockpile Area, former SWL, and a majority of the remaining site railroad system. The schedule for implementation of this PSP is expected to begin in May 2005. Precertification of this area will begin following successful completion of the excavation control process and prior to certification.

This PSP is not considered a work authorization document (for implementation of fieldwork) per SH-0012, Work Permits. Work authorization documents directing the implementation of fieldwork, per SH-0012, may include applicable Environmental Services procedures, Fluor Fernald work permits, Radiological Work Permits (RWPs), penetration permits, and other applicable permits.

1.3 VARIANCE/FIELD CHANGE NOTICE (V/FCN) DOCUMENTATION

The Variance/Field Change Notice (V/FCN) process is utilized to document the occurrence of two situations. The first is to document a change in protocol occurring when a modification in the

1 characterization approach is required [e.g., a different decision process for defining the extent of
2 contamination or for verifying that soil is below-WAC or below-final remediation level (FRL)
3 concentrations]. Factors that will be considered under special circumstances include safety of the workers,
4 cost effectiveness, the need for a timely response, and impending weather conditions. This type of V/FCN
5 requires agency approval prior to implementation.

6
7 The second situation requiring a V/FCN is to provide documentation of sampling and analytical activities
8 and to provide variable information that is dependent upon field conditions and cannot be specified
9 initially in this PSP. As part of the excavation control process, the collection of physical samples will be
10 documented in applicable field logs and with V/FCNs. Additionally, the Data Group Form, FS-F-5157
11 will be generated per Procedure EW-1021, Preparation of the Project Waste Identification and
12 Disposition (PWID) Report, following the generation of data from the analysis of physical samples. In this
13 situation the use of this V/FCN form is not used to document a change in the protocol of this PSP, but is
14 used to document sampling and analytical activities in order to demonstrate that these activities are
15 compliant with the protocols of this PSP.

16
17 If a V/FCN is required, the Characterization Manager or designee will document the change and
18 requirements through the V/FCN process in accordance with Section 7.5 of the General PSP.

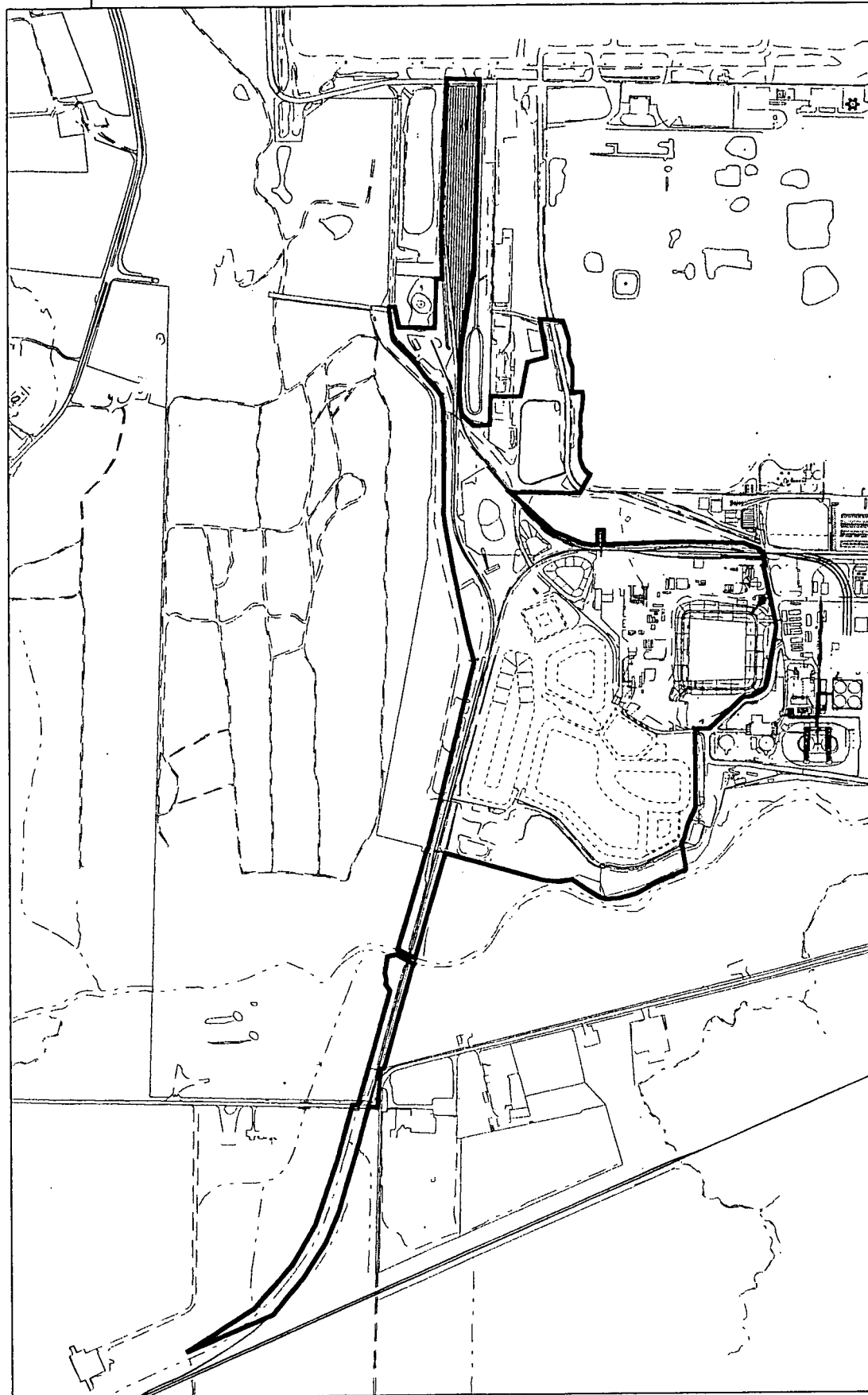
19 20 1.4 KEY PERSONNEL

21 Key project personnel responsible for performance of the project are listed in Table 1-1.

TABLE 1-1
KEY PERSONNEL

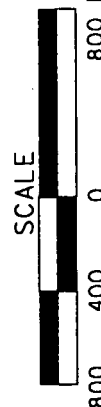
Title	Primary	Alternate
Department of Energy (DOE) Contact	Johnny Reising	TBD
DSDP Project Manager	Jyh-Dong Chiou	Frank Miller
Characterization Manager	Frank Miller	Krista Flaugh
Area 6 - Lead	Krista Flaugh	Debbie Brennan
RTIMP Manager	Mike Frank	Dale Seiller
Soil Sampling Manager	Tom Buhrlage	Jim Hey
Surveying Manager	Jim Schwing	Andy Clinton
WAO Contact	Linda Barlow	Pat Shanks
Construction Manager	Kevin Harbin	Tim Hastings
Engineering Lead	Tony Snider	Dave Russell
Laboratory Contact	Heather Medley	Amy Meyer
Data Validation Contact	Jim Chambers	Baohe Chen
Field Data Validation Contact	Dee Dee Early	Jim Chambers
Data Management Lead	Krista Flaugh	Debbie Brennan
Radiological Control Contact	Corey Fabricante	Mike Schneider
FACTS/SED Database Contact	Kym Lockard	Susan Marsh
Quality Control Contact	Reinhard Friske	Darren Wessel
Safety and Health Contact	Gregg Johnson	Pete Bolig

DSDP - Demolition, Soil and Disposal Project
 FACTS - Fernald Analytical Computerized Tracking System
 RTIMP - Real Time Instrumentation Measurement Program
 SED - Sitewide Environmental Database
 WAO - Waste Acceptance Organization



LEGEND:

— A6 WASTE PITS
GENERAL AREA BOUNDARY



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2.0 AREA-SPECIFIC WORK REMAINING STATUS

2.1 WASTE PITS AND GENERAL AREA

2.1.1 History

Roughly half of the scope is comprised of Waste Pits, which were established during production and remediated under OU1. The majority of the other half of the scope is the area surrounding the Waste Pits much of which was used in support of treatment of pit material and subsequent transportation of this material. The remaining miscellaneous areas served no major purpose during the history of site operations.

2.1.2 Predesign

Section 2.1.2 is not applicable to this PSP.

2.1.3 Excavation Control

2.1.3.1 ASCOCs

The preliminary list of area-specific constituents of concern (ASCOCs) found in Table 2-7 of the Sitewide Excavation Plan, data from the predesign investigations associated with the Area 6 Waste Pits and General Area, and historical information resulted in the primary and secondary constituents of concern (COCs) presented in Table 2-1.

The data collected in Area 6 Waste Pits and General Area was compared to the On-Site Disposal Facility WAC. There were two constituents found to exceed WAC (technetium-99 and total uranium) in Area 6 General Area during the characterization process. As state in Section 2 of the *Excavation Plan for the Area 6 Waste Pits and General Area*, the above-WAC material in the Area 6 Waste Pits is being removed under the OU1 Remediation. Several COCs were found to exceed the FRL in both the Waste Pits and the General Area during the characterization process. In areas where radiological COCs were identified as above-FRL or above-WAC (except for technetium-99), excavation will be controlled through the use of real time measurement systems. In areas where non-radiological COCs or technetium-99 was identified as above-FRL or above-WAC, excavation will be controlled by physical sampling.

The evaluation of the list of preliminary ASCOCs from the previously mentioned PSPs resulted in the following list of COCs for excavation control of the Waste Pits Area. The list of primary COCs is unchanged and will be carried through to certification. Additionally, two secondary COC were identified for the General Area as shown below.

Primary COCs

- Total Uranium
- Radium-226
- Radium-228
- Thorium-228
- Thorium-232

Secondary COCs

- Technetium-99
- Aroclor-1254

The above list of COCs will be used to verify that the planned excavation limits are sufficient to capture the above-FRL contamination during excavation. Note that the entire ASCOC list applicable to this area will be re-evaluated during the certification design process to determine which of the ASCOCs will be carried into certification. As always, this evaluation as well as the justification for the retention or elimination of any COC will be presented in the Certification Design Letter for agency review and approval.

2.1.3.2 Excavation Types

The types of excavation identified in the Area 6 Waste Pits and General Area are either above-WAC (driven by total uranium or technetium-99) or above-FRL (driven by total uranium, thorium-232, or aroclor-1254). There are ten known above-WAC areas in the Area 6 General Area. Several above-FRL areas for Area 6 Waste Pits and General Area were identified (for more information, refer to Section 2 of the Excavation Plan for this area). Therefore, the types of excavation identified for the Area 6 Waste Pits and General Area will be for both above-WAC and above-FRL areas. Real-time scanning for all radiological constituents except technetium-99 will be performed for above-WAC and above-FRL radiological areas per 20300-PSP-0011, Section 5.1. Table 2-1 lists the excavation control COCs and their limits within the Area 6 Waste Pits and General Area. Table 2-3 addresses the excavation monitoring and sampling requirements for this area.

2.1.3.3 Locations

The areas identified as being above-WAC within the Area 6 General Area are summarized in Table 2-2 and illustrated in Figures 2-1 and 2-2. It should be noted that Above-WAC Area 3 has been removed. For more information on this, refer to Section 2 of the Excavation Plan.

Nearly all of the above-FRL areas found either in the Waste Pits or the General Area will be controlled through real time monitoring systems, which will be scanning the entire area. Discrete excavation areas

1 are covered in the Excavation Plan. However, one above-FRL area (to the southwest of the former SWL
2 as shown on Figure 2-1) will need to be controlled by physical sampling for aroclor-1254.

3

4 2.1.3.4 Precertification

5 Precertification will be performed per 20300-PSP-0011, Section 3.0 and Section 6.0.

TABLE 2-1
LIMITS FOR AREA 6 WASTE PITS AND
GENERAL AREA EXCAVATION CONTROL COCs

Primary COCs	WAC	MDC	FRL
Total Uranium	1030 mg/kg	8.2 mg/kg	82 mg/kg
Radium-226	NA	0.17 pCi/g	1.7 pCi/g
Radium-228	NA	0.18 pCi/g	1.8 pCi/g
Thorium-228	NA	0.17 pCi/g	1.7 pCi/g
Thorium-232	NA	0.15 pCi/g	1.5 pCi/g
Secondary COCs	WAC	MDC*	FRL
Technetium-99	29.1 pCi/g	2.91 pCi/g	30.0 pCi/g
Aroclor-1254	NA	13.0 µg/kg	130 µg/kg

* Note that when WAC is < FRL, MDC will be based on WAC.

µg/kg - micrograms per kilogram

MDC - minimum detectable concentration

mg/kg - milligrams per kilogram

pCi/g - picoCuries per gram

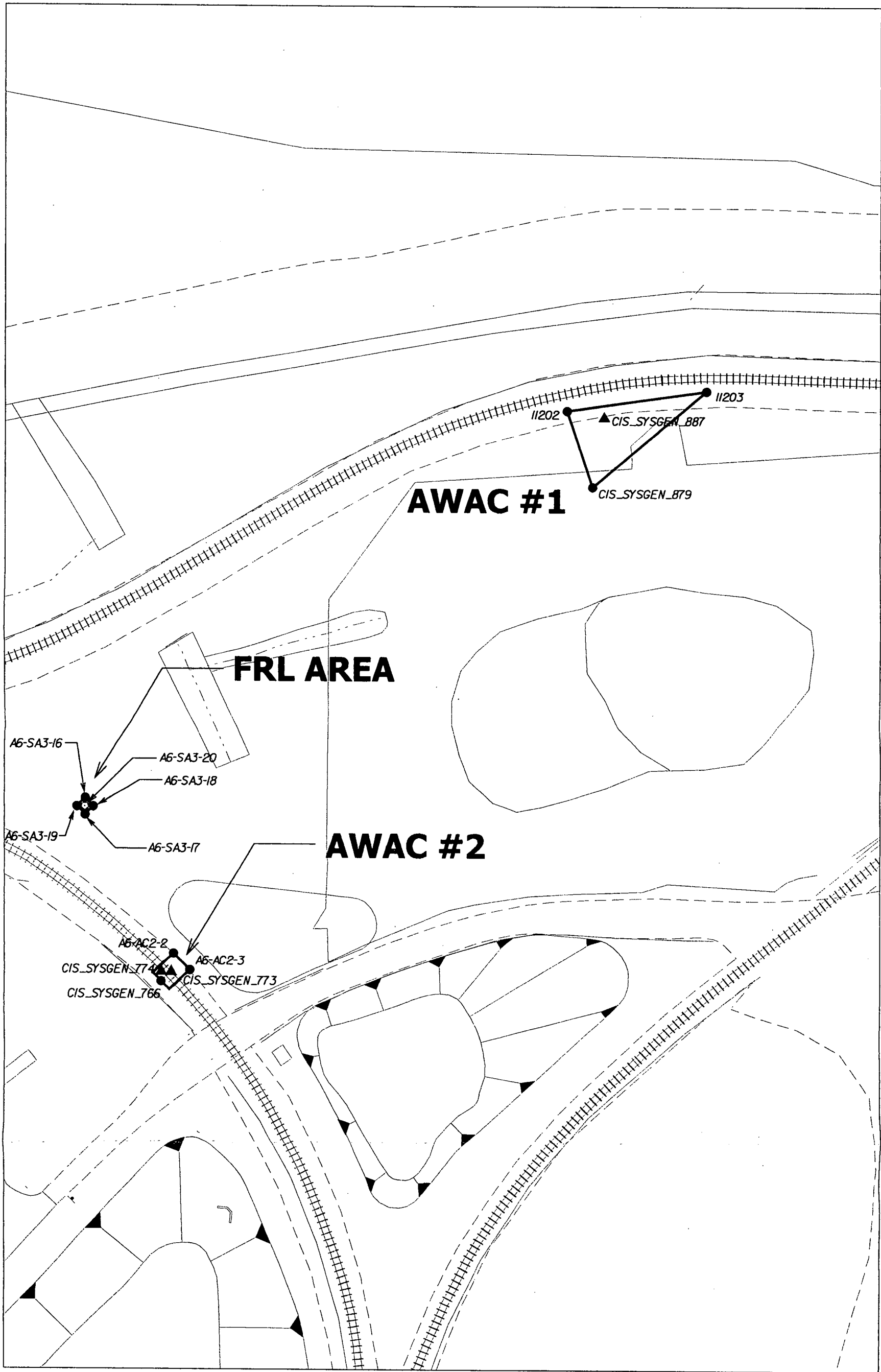
TABLE 2-2
ABOVE-WAC AREAS AND COCs FOR AREA 6 GENERAL AREA

Above-WAC Area	Location	Contaminant Driving Excavation
1	North of the former Solid Waste Landfill	Total Uranium
2	Southwest of the former Solid Waste Landfill	Total Uranium
4	Southwest of the SWM Pond	Technetium-99
5	East of the road Southeast of Waste Pit 4	Total Uranium
6	Northwest of the BSL and South of Waste Pit 4	Total Uranium
7	West of the Material Handling Building	Total Uranium
8	Footprint of the Material Handling Building and Railcar Building	Technetium-99
9	Footprint of SP-7	Total Uranium and Technetium-99
10	Biodenitrification Surge Lagoon	Total Uranium

TABLE 2-3
EXCAVATION MONITORING/SAMPLING REQUIREMENTS
FOR AREA 6 WASTE PITS AND GENERAL AREA

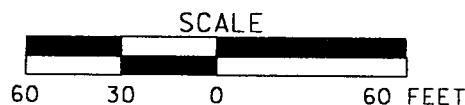
Type of Contamination Zone	Types of Samples/Measurements and Data Use		
	Sideslope of Each Excavation Lift	Floor of Each Excavation Lift	Floor/Sideslope at Design Depth for Contamination Zone
Above-FRL Uranium	• NaI for Uranium (WAC)	• NaI for Uranium (WAC)	• NaI for Uranium WAC/FRL*
Above-FRL Thorium-232	• NaI for Thorium-232/ Uranium (WAC)	• NaI for Thorium-232/ Uranium (WAC)	• NaI for Thorium-232/ Uranium WAC/FRL*
Above-FRL Aroclor-1254	• NaI for Uranium (WAC) • Physical Sample for Aroclor-1254	• NaI for Uranium (WAC)	• NaI for Uranium WAC/FRL* • Physical Sample for Aroclor-1254
Above-WAC Uranium	• NaI for Uranium (WAC)	• None	• NaI for Uranium WAC/FRL*
Above-WAC Technetium-99	• NaI for Uranium (WAC) • Physical Sample for Tc-99	• None	• NaI for Uranium WAC/FRL* • Physical Sample for Tc-99

* During sodium iodide (NaI) uranium WAC scan, the data collected will be evaluated later for precertification purposes by reviewing concentrations of thorium-232 and radium-226, as well as thorium-228 and radium-228 based on equilibrium, in comparison to their respective FRLs.



LEGEND:

- ☆ ABOVE-FRL BORING
- ▲ ABOVE-WAC BORING
- BOUNDING BORING



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FIGURE 2-1. AREA 6 GENERAL AREA, ABOVE-WAC AREAS #1 AND #2 AND ABOVE-FRL AREA

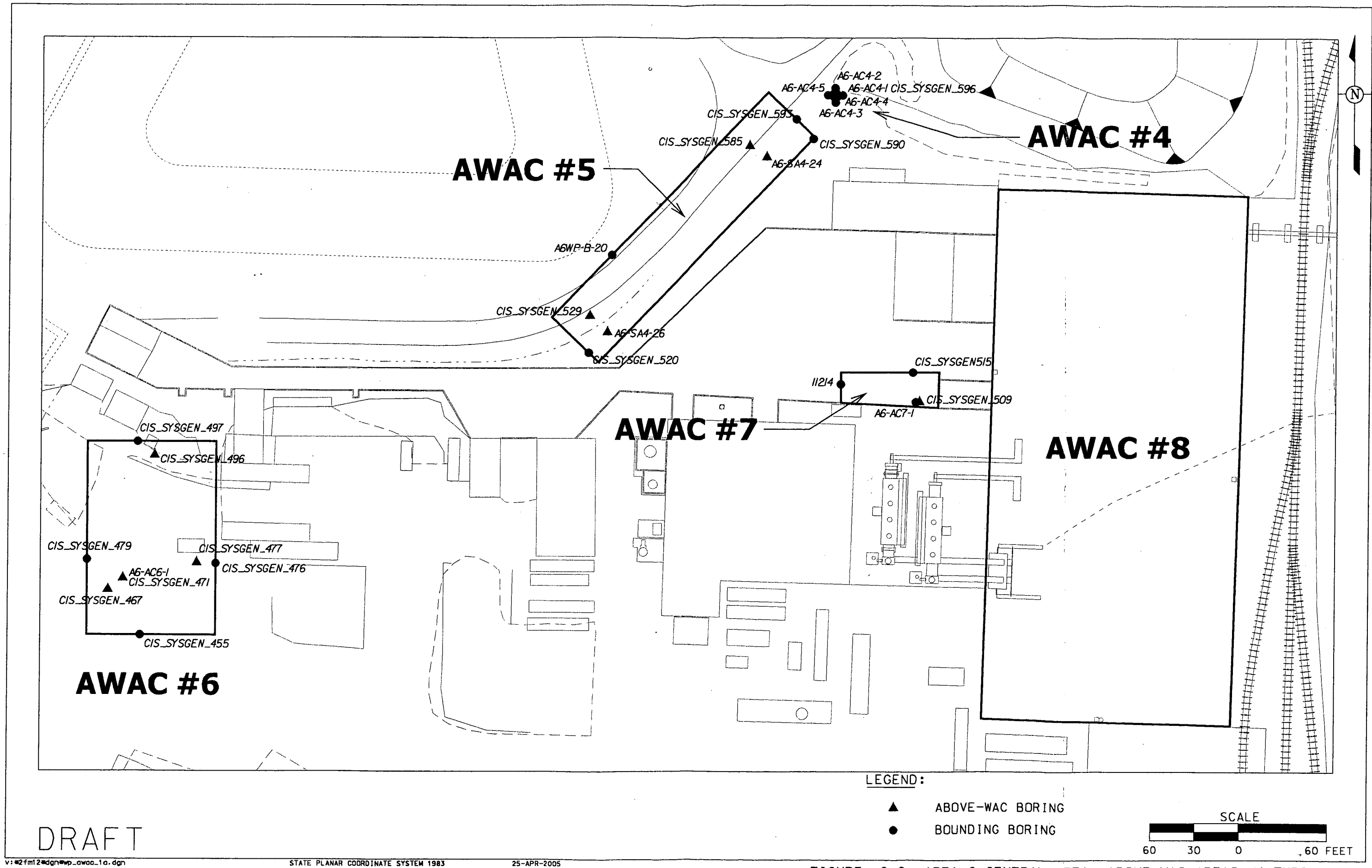


FIGURE 2-2. AREA 6 GENERAL AREA, ABOVE-WAC AREAS #4 THROUGH #8

3.0 INSTRUMENTATION AND TECHNIQUES

Reference the corresponding section of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation* for each of the following sections:

3.1 MEASUREMENT INSTRUMENTATION AND TECHNIQUES

3.1.1 Real-Time

3.1.1.1 Sodium Iodide Data Acquisition (RTRAK, RSS, GATOR, EMS)

3.1.1.2 HPGe Data Acquisition

3.1.1.3 Excavation Monitoring System

3.1.1.4 Radon Monitor

3.1.2 Surface Moisture Measurements

3.2 REAL-TIME MEASUREMENT IDENTIFICATION

3.3 REAL-TIME DATA MAPPING

3.4 REAL-TIME SURVEYING

4.0 PREDESIGN

Section 4 is not applicable to this PSP.

5.0 EXCAVATION CONTROL MEASURES

Reference the corresponding section of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation* for each of the following sections:

5.1 EXCAVATION DESIGN CONTROL REQUIREMENTS

5.1.1 Contamination Zone

5.1.2 Floors, Roads and Foundations

5.1.3 Real-Time Lift Scans

5.1.4 Above-WAC Lift Scans

5.2 ORGANIC SCREENING AND PHYSICAL SAMPLING REQUIREMENTS

5.2.1 Above-WAC Photoionization Detector (PID)/Gas Chromatograph (GC) Screening

5.2.2 All Other Physical Sample Requirements

5.2.3 PID Screening and Physical Sampling Procedures

5.2.4 Physical Sample Identification

6.0 PRECERTIFICATION

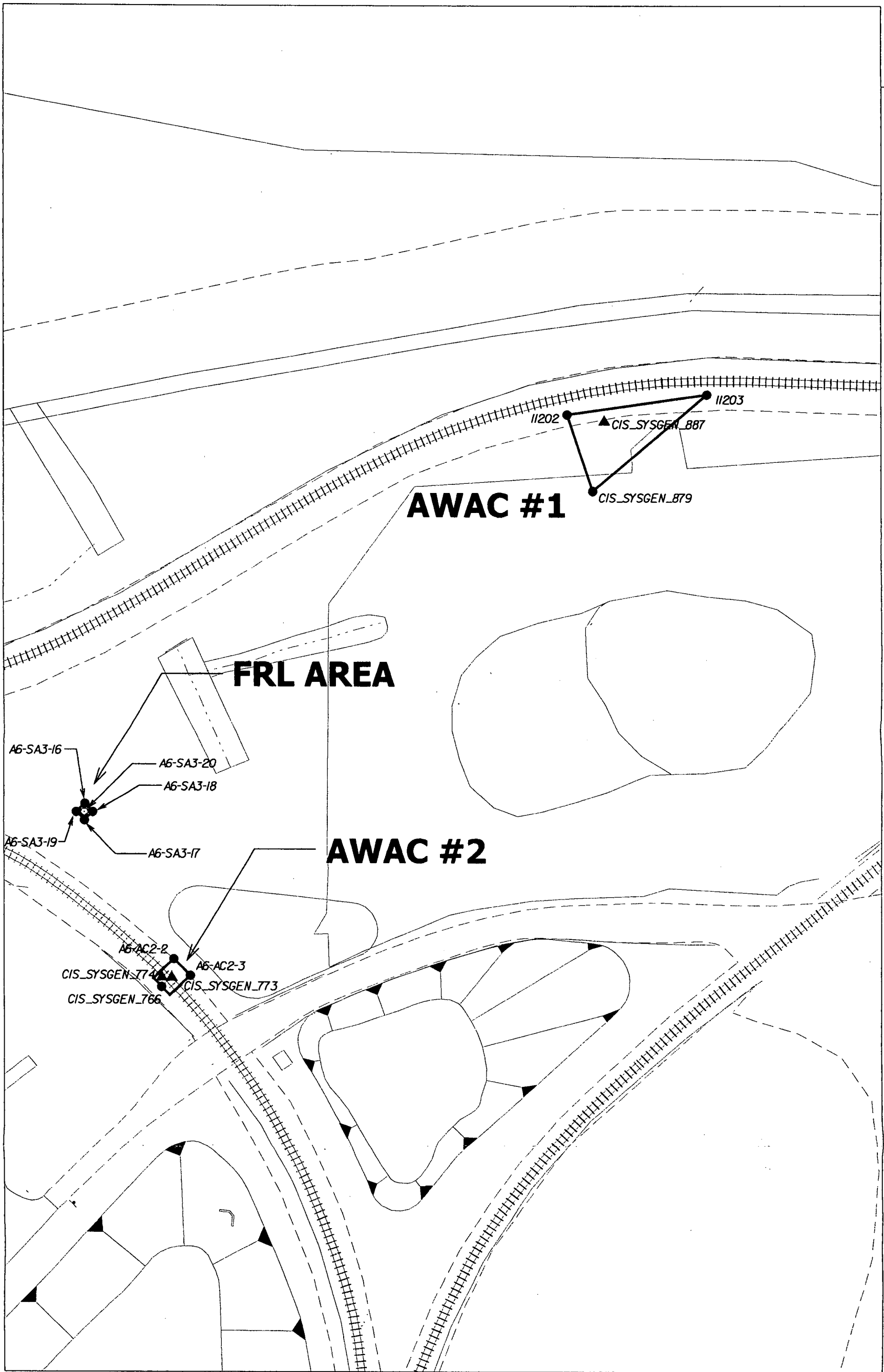
Reference the corresponding section of 20300-PSP-0011, *Project Specific Plan Guidelines for General Characterization for Sitewide Soil Remediation* for each of the following sections:

6.1 INITIAL PRECERTIFICATION NaI SCAN AT BASE OF DESIGN GRADE

6.2 PRECERTIFICATION HPGE MEASUREMENTS IN 20 PPM FRL (URANIUM) AREAS

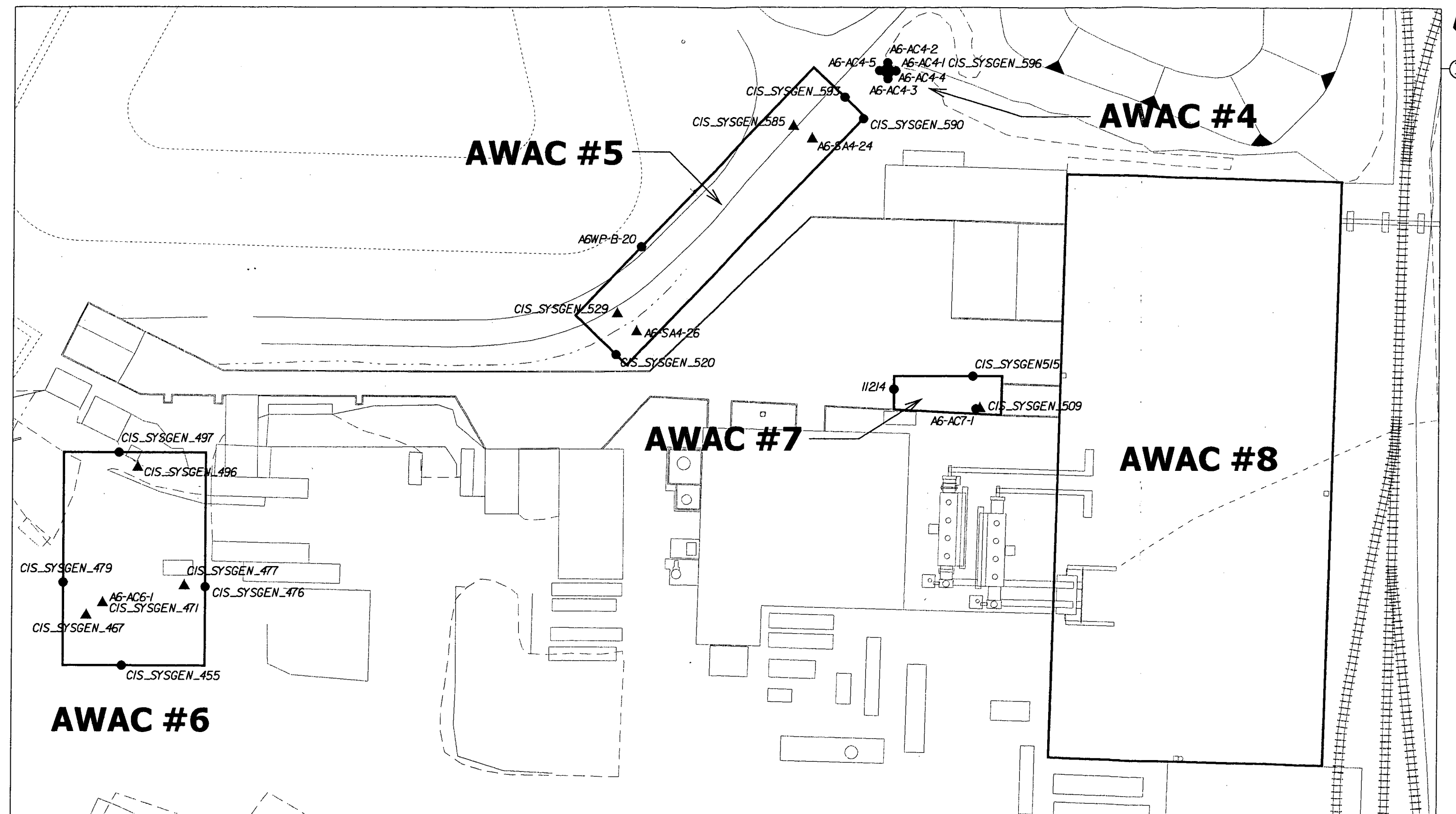
6.3 PRECERTIFICATION HPGE MEASUREMENTS IN 82 PPM FRL (URANIUM) AREAS

6.4 DELINEATING HOT SPOTS FOLLOWING PRECERTIFICATION HPGE MEASUREMENTS



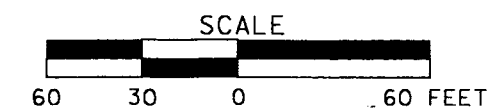
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FIGURE 2-1. AREA 6 GENERAL AREA, ABOVE-WAC AREAS #1 AND #2 AND ABOVE-FRL AREA



LEGEND:

- ▲ ABOVE-WAC BORING
- BOUNDING BORING



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FIGURE 2-2. AREA 6 GENERAL AREA, ABOVE-WAC AREAS #4 THROUGH #8